Urinary Incontinence among Aging Men

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Introduction

Urinary incontinence (UI) is a symptom that has a significant impact on quality of life. In 2000, an estimated 17 million community-dwelling persons in the U.S. had UI, defined as daily episodes of urinary incontinence. An estimated 1.89 million residents of long-term care facilities were older than 60 years, and about 50% (945,000) of them had incontinence. The total cost of managing UI in the U.S. was $19.5 billion in 2000.1

Although men may have a lower prevalence of UI than do women, a significant percentage of aging males experience lower urinary tract symptoms (LUTS) and UI. The prevalence of incontinence in a community-based study was 24% among men and 49% among women. However, only 29% of men and 13% of women with incontinence sought care for their urinary symptoms.2 The prevalence of UI among men increases with age; it is reported to be 15.5%, 24%, and 30% in the age groups of 55–64, 65–74, and ≥75 years, respectively.3 The annual incidence of UI ranges from 8–12% among men over 65 years.4 The Canadian Urinary Bladder Survey found that incontinence was related both to age and gender. Overall, 5.4% of men and 28.8% of women had urge urinary incontinence, stress urinary incontinence (SUI), or mixed urinary incontinence.5

The increase in life expectancy is accompanied by a rising pandemic of chronic diseases, including UI. Approximately 20% of the labour force will be 65 years or older by 2020. The number of persons aged 85 years or older in U.S. will increase from 2 to 5% by the 2050. Physicians are soon likely to face an epidemic of older people with LUTS and UI.6

Effects of Age on Urinary Function

Lower urinary tract symptoms and UI comprise a symptom complex that could contribute to a multifactorial geriatric syndrome. The aging process affects the bladder function in different ways. The aging detrusor muscle is characterized by dense bands with a limited content of collagen fibrils and abundant normal muscle-cell junctions. Muscle fascicles have the normal arrangement, structure, and configuration.7

These pathological changes contribute to decreased functional bladder and make the detrusor more overactive. The detrusor contraction may be impaired, causing increased post-void residual urine (PVR) volume. Reduction of the renal concentrating ability with advanced age leads to increased nocturnal fluid excretion and a large urine volume. Iatrogenic incontinence following pelvic or prostatic surgery may also contribute to the increased prevalence of incontinence.

Lower urinary tract symptoms secondary to prostatic enlargement are a common problem among older men and can be associated with detrusor overactivity and urge urinary incontinence or overflow incontinence. A recent study demonstrated detrusor overactivity in 61% of men with LUTS. Those men with detrusor overactivity were significantly older, were more obstructed, and had a larger prostatic volume. They also had a lower cystometric bladder capacity and voided volume. The study concluded that detrusor overactivity is independently

Key words: urinary incontinence, aging male, older adults, men's health
associated with age and bladder outlet obstruction. The overactive but weak detrusor with increased PVR may be associated with detrusor overactivity with impaired contractility. This condition affects two-thirds of community-dwelling men with LUTS, and it may mimic either stress or urge urinary incontinence. The diagnosis and treatment are very challenging.

Impaired mobility, altered ability to toilet independently, impaired manual dexterity, mental and medical conditions, and slower reaction times may significantly influence an older adult’s ability to get to bathroom on time, and may predispose to UI. Older adults with cognitive impairment may not recognize the urgency to void. Medical conditions common among older adults, such as diabetes, also contribute to bladder dysfunction. Approximately 74% of diabetic men have bladder dysfunction—detrusor overactivity (50%) and diabetic cystopathy 25%, the latter of which is characterized by impaired bladder contractility and sensation, increased bladder capacity, and increased PVR.

Chronic medical condition such as dementia, congestive heart failure, and severe constipation may predispose to UI in older men. Some medications may contribute to UI. Diuretics may lead to polyuria, frequency, and often to incontinence and enuresis. Calcium blockers, opiates, and anticholinergics can impair complete bladder emptying and contribute to overflow incontinence.

Types of Urinary Incontinence

The clinical presentation of UI may be acute and “transient” or chronic. Acute UI is of sudden onset and is precipitated by potentially reversible treatable conditions such as dementia, urinary infections, psychological causes (especially depression), medications, diabetes, and constipation.

The International Continence Society (ICS) define incontinence as “the involuntary loss of urine that is a social or hygienic problem.” Definitions of the various types of UI are presented in Table 1 and depicted in Figure 1.

Clinical Evaluation and Diagnosis

History and Physical Examination

A comprehensive history and physical examination should be performed in this patient population. Particular attention must be directed to cognition, medical problems (e.g., diabetes, stroke), mobility, and neurological disease. A voiding history including LUTS and type and occurrence of UI is important. Information about how the patient is coping with UI is essential. A voiding diary or validated symptom questionnaire done by the patient or caregiver provides valuable information and objectively characterizes the symptoms and the patient’s response to the treatment. A past history of pelvic, prostatic, or spinal surgery or trauma is important and must be elicited. Approximately 4% and 8% of patients develop incontinence after undergoing a transurethral resection of the prostate (TURP) or radical prostatectomy, respectively.

Since many medications have some effect on the lower urinary tract by design or as a side effect, a review of all medications the patient is taking and their dosages is imperative.

The physical examination should focus on an abdominal inspection for masses, bladder distension, and scars from previous surgery. Rectal digital examination is mandatory in older men; it provides information about the size and consistency of the prostate and any associated rectal pathology. If indicated, a focused neuro-urological examination is recommended, including the evaluation of perianal sensation, anal sphincter tone, and voluntary pelvic floor contractions. Performance of a cognitive assessment is particular helpful among older adults.

Laboratory Investigations

A urinalysis and a culture and sensitivity test are important to rule out transient causes of incontinence. Bacteriuria is commonly seen among older adults, especially those with indwelling catheters or external collecting devices. In general, asymptomatic pyuria or bacteriuria in these patients should not be treated. The clinical manifestation of the urinary tract infections is not typical in the older adult population. Lethargy and confusion, for example, may replace the classic presentation of fever and dysuria. Serum blood urea and creatinine levels are helpful to evaluate the function of the upper urinary tract. The presence of microscopic hematuria calls for further investigation, including urine cytology, cystoscopy, and upper urinary tract imaging to rule out malignancy or another pathology.

A PVR measurement using ultrasonography or a bladder scanner is very valuable. There is still no consensus on normal values of PVR in older men. However, in general, a PVR <50 mL is considered normal, whereas a PVR >300 mL is considered abnormal, with a grey area in between the two volumes.

Urodynamic Tests

In general, urodynamic testing is indicated for older men if conservative empirical treatment has failed and an invasive surgical intervention is contemplated. Uroflowmetry is a simple noninvasive electronic test of the urinary flow, voiding volume, and PVR. It is indicated as a screening and follow-up test. Uroflowmetry does not differentiate bladder outlet obstruction from detrusor underactivity in the case of low urinary flow.

Cystometry is a functional test of bladder storage and provides information about the bladder sensation, maximal cystometric capacity, detrusor compliance, and detrusor contractility. Detrusor leak point pressure may be indicated in male patients with incontinence after undergoing a radical prostatectomy, a TURP, or radiation. The value of this test is still contested.

Pressure-flow studies are critical to differentiate between bladder outlet obstruction and detrusor underactivity. As per European Association of Urology guidelines, pressure-flow studies might be indicated in men with LUTS before surgery in symptomatic patients with a normal flow rate, in older adults (e.g., >80 years), in the presence of large PVR (>300 mL), in patients with a suspicion of neurogenic bladder dysfunction.
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Figure 1: Male Urinary Incontinence

Male urogenital anatomy

ureter

bladder (detrusor muscle)

pubic bone

urogenital diaphragm

urethra

penis

types of urinary incontinence

overflow

abdominal pressure

urethral blockage (i.e., due to enlarged prostate)

stress

relaxed pelvic floor

urge

bladder oversensitivity due to neurologic disorders or infection
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Table 1: Definitions of Urinary Incontinence

<table>
<thead>
<tr>
<th>Type of Incontinence</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Stress urinary incontinence</td>
<td>The complaint of involuntary leakage on effort or exertion, sneezing, or coughing. It is rare among men and represents &lt;10% of incontinence in the male population. It is usually associated with injury to external sphincter secondary to prostate surgery or radiation, neurological injury, or trauma.</td>
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<tr>
<td>Urge urinary incontinence</td>
<td>The complaint of involuntary leakage accompanied by or immediately preceded by urgency. It is the most bothersome type of urinary incontinence (UI) and is commonly associated with detrusor overactivity. Urge incontinence is reported in 40–80% of older men with UI.</td>
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<tr>
<td>Mixed urinary incontinence</td>
<td>The complaint of involuntary leakage associated with urgency and also with exertion, effort, sneezing, or coughing. Mixed incontinence is the second most common type of UI (10–30%) and is associated with combination of urge and stress symptoms.</td>
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<tr>
<td>Nocturnal enuresis</td>
<td>The complaint of the loss of urine occurring during sleep.</td>
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<tr>
<td>Overflow incontinence</td>
<td>Defined as urinary loss secondary to an overfilled bladder. The International Continence Society (ICS) no longer recommends the term overflow incontinence as it is considered confusing and lacking a convincing definition. If used, a precise definition and any associated pathophysiology, such as reduced urethral function or detrusor overactivity/low bladder compliance, should be stated. The term chronic retention excludes transient voiding difficulty, for example, after surgery for stress incontinence, and implies significant residual urine; a minimum figure of 300 mL has been suggested.</td>
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<tr>
<td>Continuous urinary incontinence</td>
<td>The complaint of continuous urine leakage.</td>
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<td>Situational urinary incontinence</td>
<td>For example, incontinence during sexual intercourse, or giggle incontinence—is very rare in men.</td>
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<tr>
<td>Functional urinary incontinence</td>
<td>Although not defined by ICS, is a practical definition of UI that occurs in patients with mental (dementia, depression) or physical (stroke, paresis, mobility problems) challenges, preventing the patient from socially accepted toileting.</td>
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</table>

(e.g., a neurological disease such as Parkinson’s disease), or in patients who have undergone radical pelvic surgery. Cystoscopy may be indicated in certain cases to evaluate bladder outlet obstruction (benign prostatic hyperplasia, bladder neck contraction, urethral stricture) or to rule out the presence of another bladder pathology such as a tumour, diverticulum, interstitial cystitis, or stones.

Treatment of Urinary Incontinence among Older Men

Nonpharmalogical treatments of urinary incontinence in older men are useful in the short term but depend on a motivated caregiver. One study reported a 26% overall reduction in incontinence and that 38% of the patients improved by >50% after behavioural therapy and prompted voiding. Because of the multifactorial nature of UI and the associated comorbidities in older patients, the treatment arrangement should involve a multidisciplinary approach. It should be based on the best available scientific evidence but also be individualized to the patient’s medical condition, family situation, and personal choices.

The general principle for the conservative treatment of UI includes scheduled voiding, fluid restriction, treatment of constipation, and a medication review. Among patients with significant peripheral edema due to congestive heart disease or renal disease, nocturia and nocturnal enuresis can be limited by elevating the legs for 2–4 hours before bedtime. Constipation should be treated, and smoking should be discouraged to decrease chronic coughing. Behavioural therapy has some role for older men. Time voiding may be useful for individuals with cognitive impairment. Functional incontinence is managed by caregiver-dependent interventions, which include frequent toileting and prompted voiding.

Medical Treatment

Antispasmodic and antimuscarinic drugs are the first line of treatment for urge urinary incontinence. They can also be indicated in mixed urinary incontinence. The main concern with all anticholinergics is side effects, which are particularly important to consider in the older adult population. The majority of these medications have a significant effect on cognition, vision, and the gastrointestinal tract. Oxybutynin is well known to affect function of the central nervous system (CNS). Some of the new, more selective anticholinergics (solifenacin and darifenacin) or those with less CNS penetration (tamsulosin chloride) may be, at least theoretically, associated with fewer CNS side effects. Using antimuscarinics for patients with detrusor overactivity with impaired contractility or for patients with a high PVR may precipitate urinary retention.

Alpha-blockers are the mainstay of treatment for LUTS in men with benign prostatic enlargement secondary to obstruction and overactive bladder with or without incontinence. With older nonselective alpha-blockers, adverse side effects, mainly orthostatic hypotension, occur in about 5–9% of patients. Other side effects include dizziness and asthenia. The uroselectivity of new alpha-blockers such as alfuzosin and tamsulosin have made dose titration unnecessary.

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unnecessary; they have less effect on blood pressure.\textsuperscript{20} 5-alpha-reductase inhibitors are used alone or in combination with alpha-blockers in patients with large prostate to reduce the prostate volume and control the symptoms.

Duloxetine is a serotonin and norepinephrine reuptake inhibitor that increases urethral striated muscle tone; it seems to be useful in the treatment of postprostatectomy SUI.\textsuperscript{21} Duloxetine is not approved for treatment of postprostatectomy stress urinary incontinence in Canada; such use is off-label.

It is important to consider effects of the pharmacokinetics of certain agents, especially among older adults with decreased hepatic glycosylation and renal clearance. Polypharmacy is also an issue for older adults, who on average take five different medications for other medical conditions. Drug interactions and side effects are common.\textsuperscript{6}

**Surgical Treatment**

Surgical treatment is indicated when the medical treatment and conservative measures have failed. Artificial urinary sphincters are the mainstay of surgical treatment for patients with postprostatectomy incontinence and in patients with external sphincter deficiency secondary to a neurological lesion. It reduces the used pad count from 4.0 to 0.62 per day, leading to continence in 90\% of patients.\textsuperscript{22} The long-term complication rate is 37\% and includes mechanical failure followed by erosion and infection.\textsuperscript{23}

Periurethral injection of bulking agents such as collagen may be useful in milder cases of postprostatectomy SUI; however, the result is generally disappointing.\textsuperscript{24} Adjustable continence balloon therapy is still experimental. A bone-anchored male sling has been associated with a satisfactory rate of success in the treatment of male SUI (68\%).\textsuperscript{25} However, it is not broadly used in Canada. Recently introduced, the transobturator male sling has been associated with a satisfactory rate of success in the treatment of patients with detrusor hypocontractility or acontractility and a high PVR. An indwelling, suprapubic, or condom catheter is indicated when intermittent self-catheterization is difficult to perform—e.g., in patients with pressure sores or skin irritations caused by incontinent urine.

**Incontinences Aids and Devices**

The use of pads and undergarments can be helpful for individuals with UI but should be used appropriately as they may lead to incontinence dermatitis and skin ulceration in some patients. Intermittent self-catheterization is the gold standard for the management of patients with detrusor hypocontractility or acontractility and a high PVR. An indwelling, suprapubic, or condom catheter is indicated when intermittent self-catheterization is difficult to perform—e.g., in patients with pressure sores or skin irritations caused by incontinent urine.

**Conclusion**

Urinary incontinence should be considered an important symptom in the older male population and should not be dismissed. The prevalence of the UI increases with age due to functional impairments and concomitant medical problems. Because of its multifactorial etiology, it requires a careful assessment of genitourinary tract, comorbid conditions, and functional status. Cognitive impairment and limited mobility add to the challenges in providing care for older people. Several treatment options, including behavioral therapy, medical treatment, and surgical intervention, have demonstrated safety and efficacy in older persons; however, patient selection and collaboration with the caregiver are essential for success. Treatment must be tailored to the patient's needs.

Dr. Jerzy Gajewski serves on advisory boards of Astellas, Bayer, Medtronic, Pfizer, Janssen-Ortho, and Allergan. Dr. Ehab A. Elzayat and Dr. Ali Alzahrani have no competing financial interests to declare.

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